

REMARKS

Careful consideration has been given by the applicants to the Examiner's comments and rejection of the claims, as set forth in the outstanding Office Action, and favorable reconsideration and allowance of the application, as amended, is earnestly solicited.

Applicants note the rejection of the claims on the basis of new grounds, as detailed in the Office Action.

Concerning the rejection under 35 U.S.C. §112, in that the claims are generally narrative and indefinite, applicants have herewith presented amended and new claims, which are deemed to overcome the formal grounds in view of the particular terminology as presented herein.

Concerning Claims 5 and 7, as well as Claims 8 and 9, these claims have been cancelled without prejudice or disclaimer, and consequently, no further comments are required in that connection.

Applicants further note the Examiner's rejection of the claims under 35 U.S.C. §102, as detailed in the Office Action, and concerning the foregoing, the herewith amended and new claims are deemed to clearly and patentably distinguish over the art, as represented by Dantlgraber, U.S. Patent No. 4,132,506, of record.

With respect to the claims and the distinctions over the art represented by Dantlgraber, applicants note that the claims, as amended and newly presented herein, clearly distinguish over the present state-of-the-art.

In particular, with respect to Dantlgraber, the latter discloses a hydraulic pump 1 which generates a pressure P_U at its outlet 1a that is generally proportional to the pressure at its control port (Column 1, Lines 10-12). Consequently, two pilot cylinders 9 and 10 change

the volume of the pump 1. The cylinder 10 is charged with the pump pressure P_U (as at the outlet 1a), whereas the cylinder 9 is charged with a control pressure controlled by control valve 18. The control valve 18 provides for a chamber 18a that is connected to a pressurizable pilot port 9a via the conduit line 17 (Column 3, Lines 24-27) and, thus, is NOT separately arranged from an actuated pressure connection 17.

In view of the foregoing amendments, Claims 1 and 6, and also the claims, which are dependent, clearly distinguish over the cited art.

Furthermore, Claim 5 has been cancelled and replaced by new Claim 10 in dependence upon Claim 1, which incorporates the following features:

The control apparatus according to Claim 1, wherein the control valve (26) has a ground body (51; Page 12, Line 25) with a bore (53; Page 12, Lines 25-28) in which the movable piston (76; Page 14, Line 24) is inserted, whereby the movable piston (76) has a first annular recess (77) establishing a chamber within the bore (53) which connected to the first pressure line (P) (p. 14, L. 26-29) and a second chamber establishing a second annular recess (80) connectable to a tank pressure (over bore 64, valve 25 and bore 62/Fig. 2/ Page 14, Line 24- Page 15, Line 1) and the actuating pressure connection (A; Page 12, Line 19) is connectable with the respective chamber of the first or second annular recess dependent on the position of the piston and the pressure chamber (101), which is connected by a counterpressure line to the first pressure line (Page 16, Lines 6-22), is located beyond the second annular recess (80) with regard to the first annular recess (77) (Fig. 2).

With respect to cancelled Claim 7, this has been replaced by new Claim 11, the latter of which is similar to Claim 10, but is dependent from independent Claim 6, and only distinguishes in minor language aspects, and sets forth that the first annular recess is connectable to a first pressure line, since Claim 6 only claims a valve block in the absence of any pressure lines.

The claims also provide clear patentable distinctions, in that the problem encountered by the control valves represented by Dantlgraber, with regard to control valve relative to the pump 1, is clearly elucidated herein.

The volume of the pump is regulated by the position of the cylinders 9 and 10. In balance, i.e., when the cylinders 9 and 10 are in a stable state, the control pressure at 9a is substantially lower than the pump pressure P_U at 1a, because the cylinder 9 having a piston of a substantially larger effective surface area than the cylinder 10 (Column 3, Lines 10-13). The pump pressure P_U drives a load 3 via a restriction 2 to restrict the load pressure to P_D (Column 3, Lines 10-13). The pressure pump P_U drives a load 3 via a restriction 2 to restrict the load pressure to P_D (Column 3, Lines 17-28). A person skilled in the art knows that such a restriction 2 normally decreases the pressure about only 10 to 20 bar. Thus, the chamber of the housing 18b including the first side 4a of the piston 4 is charged with the pump pressure P_U and the chamber of the housing 18b including the spring 5 and the second side 4b of the piston 4 is charged with the slightly reduced pressure P_D . The chamber 18a connected with cylinder 9 is charged with the control pressure (Column 4, Lines 3-8) which is substantially lower than the pump pressure P_U and thus, even lower than the load pressure P_D , because the pump pressure is normally decreased only by 10 to 20 bar. Thus, there can not arise any leakage from the chamber 18a to the chamber including the spring 5, because the pressure P_D

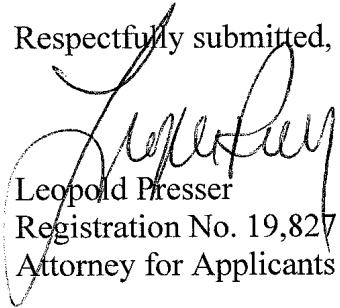
is higher than the control pressure. On the contrary, Dantlgraber is exactly subject to the problems of the state of the art, as described in the first paragraph on Page 2 of the description of the present application. The pressure gradient from the chamber including the spring 5 over the chamber 18a to drain port 8 having a reservoir pressure, causes a leakage flow in this direction which further infers that dirt particles are deposited at the sealing portions of the piston 4 at the edges of the surface 4b and the control surface 6. Besides any impairment to the sealing action of the sealing portion that is caused thereby, in extreme cases there may even take place a jamming of the valve piston (Page 2, Lines 14-16).

These problems are solved by the inventive solution of the present application, as claimed, by a pressure chamber that is separately arranged from an actuating pressure connection, and having the working line or pump pressure P_U formed by the connection with the working line over the counterpressure line. It is only the separate arrangement of this additional chamber that ensures that the leakage path is directed towards the second pressure line. Thus, there is no longer encountered any more leakage flow from the sides 4a and 4b of the piston 4 into any chamber between the two sides 4a and 4b, because the pressure of the inventive pressure chamber is higher or equal to the pressure of both chambers at the sides of the piston 4 and, thus, there is provided only a leakage from inside to the outside of the valve 18. As a result, any contamination of the inside of the control valve 18 can be effectively prevented.

In summation, inasmuch as the claims, as amended herein, provide clear and novel distinctions over Dantlgraber, the latter of which neither mentions nor even suggests the problem which is solved by the present invention, as claimed herein, and consequently, the present application is resultingly deemed to be in condition for allowance.

In view of the foregoing comments and amendments, the early and favorable reconsideration and allowance of the application by the Examiner is earnestly solicited. However, in the event that the Examiner has any queries concerning the instantly submitted Amendment, applicants' attorney respectfully requests that he be accorded the courtesy of possibly a telephone conference to discuss any matters in need of attention.

Respectfully submitted,



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